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Windsor, Conn., finds *Campanula aparinoides*, with four and five stigmas, say out of 109 specimens 61 with four stigmas, twenty-nine with three, and nineteen with five stigmas. Has any one else noticed this? A. G.

§ 251. **Rafinesque's Lechea.**—In the absence of other matter, attention is invited to this much neglected monograph, which, with all its faults, is a real addition to our knowledge of that little noticed and difficult genus. One species at least, described sufficiently for identification, has been overlooked during all these years, and some points important for distinction seem here first to have been used, The introduction is abridged, and some varieties omitted, otherwise the monograph down to the end of the specific descriptions, is copied entire from the New Flora of North America, Part I., Philadelphia, 1836. My object in calling attention to it at this time, which is most seasonable for gathering specimens, is to solicit the assistance of collectors, particularly in the regions referred to by Rafinesque for many of his species. A good specimen of Lechea should have the mature capsule, the sterile stems, *i. e.*, the prostrate or assurgent shoots which spring from the base of the stem when the fruit is about mature, and stem leaves if possible. Specimens in earlier flower are also desirable, chiefly for the form of growth and the more abundant stem leaves, as flowers are generally to be found till the end of the season.

MONOGRAPH OF LECHEA.

Linnaeus had only two species of Lechea. His L. minor and L. major have been applied at random by nearly all the botanists to any other species, till Michaux added three species. I shall now increase it to 21 species and divide it into 3 subgenera.

Characters of LECHEA. Crlyx double and persistent; external, bipartite, seldom lacking [never], sepals narrower; internal, tripartite. Petals 3, small, narrow, equal, obtuse and fugacious. Stamens 3 to 12, filiform; anthers bilobe. Stigma large, sessile, capitate, trilobe, floccose or plumose or papillose. Capsule unilocular, trivalve; 3 to 9 [6] seeds inserted on 3 small free placentas, sometimes only one by abortion. *Small annuals or perennials, with terete stiff branching stem; leaves ternate or opposite, scattered, simple entire and subsessile; flowers aestival, evanescent, paniculate or racemose, not yellow.*—Vulgar name Pin-weed.

I. MENANDRA, Fl. Virg. of Gronovius. External calyx with two short sepals or almost lacking. Stamens 6 to 9; seeds 1 to 3. *Leaves often ternate, and flowers racemose. Perennials.*

II. LECHEA. External calyx equal in length to the internal. Stamens 6 to 12; seeds 1 to 3; flowers spicate, some stems *sterile.*

III. EUDIEXA, Raf., (well 2 external). Exterior calyx longer than the internal. Stamens 3 to 6; seeds 3 to 9 [?]. Chiefly annuals.

The mistakes about these plants have arisen from few botanists seeing their anthesis or full bloom, which only lasts a few hours towards noon; the petals soon after wither and the stamens collapse or are glued to the stigma. But the characters now assumed on the persistent respective length of the calyx will always be perspicuous. I have specimens of all the described species.

[Sub-genus I.] Menandra.

1. **L. pulchella,** Raf. Quite smooth; stem stiff virgate; leaves scattered, long linear, acute: flowers paniculate and lax in naked racemes; bracts none; exterior sepals subulate, internal ovate, obtuse; petals elliptic, obtuse, incarnate; capsule obovate.—In the Pine-barrens of New Jersey, probably extending South. Probably the *L. racemulosa* of many botanists, but not Mx., which is pubescent with ciliate leaves. It is a very pretty species when in full bloom in August, the calyx being red inside, the petals incarnate, the large stigma white. The erect stiff stem produces hundreds of flowers at once, it is about one foot high, and only branched above. Several varieties; 1. *Minor*, only 2 to 4 inches high, panicle leafy; 2. *Elegans*, over a foot high, panicle fastigiate; 3. *Pyramidalis*, branches pyramidal. [L. minor, Lam ?]

2. **L. cinerea,** Raf. (L. thymifolia, Mx., etc.) Adpressed pubescent, cinereous fastigiate; leaves scattered, narrow linear adpressed; racemes paniculate, pauciflore, subnaked; flowers canescent outside, sepals lanceolate acute; capsule oblong, longer.—In Florida and Georgia: deemed *L. racemulosa* by Collins, easily known by its color, perhaps the real *thymifolia*. [L. Torreyi, nob.]

3. **L. ternifolia,** Raf. (Menandra ramis ternis, Gronov.) Stem paniculate above, adpressed pubescent; leaves and branches mostly ternate, cuneate, acute, ciliate, nearly smooth; racemes paniculate, lax, nearly naked; peduncles elongate, capsules oblong. In Virginia, New Jersey, and probably elsewhere. This must be the real *racemulosa* of Mx., who quotes Gronovius. Pedal; calyx colored of red as in *L. pulchella*. [L. racemulosa, Mchx. ?]

4. **L. furfuracea,** Raf. Pubescent pulverulent; stem erect; branches fastigiate above; leaves narrow, linear, scattered, nearly obtuse; racemes terminal, naked; pedicels unequal; exterior calyx subulate, very short, internal rounded; capsules globose.—In Kentucky and Illinois, 6 to 10 inches high; flowers greenish outside with a yellow furfle [scurf]. Nearest to *L. cinerea*, easily known by the mealy pubescence and globose capsules. [Unknown.]

5. **L. laxiflora,** Raf. Smooth; stem erect paniculate; branches lax; leaves scattered, linear, cuneate, acuminate, ciliate; racemes scattered, lax; flowers remote, naked; pedicels elongate; calyx and capsules ovate.—In New Jersey Pine Woods with *L. pulchella*, to which akin; difference in leaves chiefly, flowers green not red outside. [L. minor, Lam. ?]

6. **L. tenuifolia,** Mchx., Elliot, or L. verna, Raf. (L. juncifolia, Walter). Humble, dumose, pilose; stems assurgent; branches spreading; leaves scattered, subulate, linear, ranemes paniculate, divaricate, flowers remote, axillary, solitary; capsules globose large. —Said to grow on the R. Santi of Carolina, and to blossom earlier than any other, in April and May. No external calyx according to Elliot, yet very near to some *Eudiexa* with long external calyx.

7. **L. recurvata,** Raf. Hispid assurgent; branches opposite and ternate: leaves broad oblong, acute at both ends, ciliate; racemes spicate recurvate, unilateral; pedicels very short; sepals oval; capsules globose.—In Carolina and Virginia; akin to L. ternifolia

(perhaps the true Menandra of Gr.) leaves and fruit different; calyx reddish; seeds convex and concave. [?]

[Sub-genus II.] **Lechea.**

8. **L. mucronata,** Raf. precis, 1814; villosa, Elliott, 1820; major of Walter and Mchx., not of Linn.—Villose; stem erect, sterile stems prostrate; leaves opposite and ternate below, chiefly lanceolate, mucronate, on short petioles; flowers in compound spikes, axillary to foliaceous bracts; exterior sepals acute, reflexed in anthesis, internal sepals obtuse; capsules ovate, villose.—From New England to Carolina, the most common species, but not the Linnean *L. major* with leaves rough above tomentose beneath, and scattered flowers, which is the real Cistus Canadensis! [Helianthemum.] Flowers subsessile; exterior sepals linear, adpressed in the fruit; internal sepals lanceolate; petals lanceolate, obtuse; commonly 3 seeds, oblong, acute, with an angle inside, Several varieties. . . . . 3. *sessiliflora,* leaves lanceolate; petioles very hairy, branches fastigiate spikes axillary and short, flowers sessile, from Missouri. All perennials.

9. **L. heterophylla,** Raf., L. minor, Smith. Stem paniculate above, adpressed pubescent, leaves commonly ternate; lower obvate, subsessile; upper cuneate and linear petiolate, acute, smooth; racemes paniculate, lax, sub-naked; pedicels equal to flowers; internal sepals lanceolate, acute, carinate; capsules ovate.—Kentucky and Illinois in woods and glades; trigone; exterior sepals subequal, linear. Several varieties [&c.] It has no sterile stems. Perennial. [?]

10. **L. glomerata,** Raf. Smooth; branches short adpressed; leaves variable oblong, lanceolate or cuneate, petiolate, mucronate; flowers axillary and terminal on short pedicels, glomerate; sepals ovate, acute, carinate; capsules subglobose.—Appalachian Mts.; pedal, no sterile stems, calyx trigone over the fruit, external sepals linear. Perennial. [?]

11. **L. corymbosa,** Raf. Stem erect, rough, above pilose corymbose; leaves petiolate, broad oblong, nearly obtuse, pubescent, ciliate; flowers corymbose; pedicels equal to flowers; sepals round concave, exterior linear; capsules globose.—Mts. Alleghany, 6–12 inches high, leaves small; capsules large with 3 to 6 seeds; discovered 1818. [?]

12. **L. surculosa,** Raf. Stem with spreading branches, sterile stems prostrate, pilose, with leaves ternate, ovato-oblong, acute, ciliate, petiolate; branches smooth, with leaves opposite and alternate, smooth, linear; flowers paniculate, pedicels equal, bracts subulate: exterior sepals linear; internal ovate, acute; capsules ovate.—In Pennsylvania on dry hills: the L. minor of some authors; stem 3 to 6 inches; leaves and flowers small. [L. minor, Lam ?]

13. **L. revoluta,** Raf., minor of Linn, not of Smith or other authors. Stem erect; branches opposite and ternate; leaves 3–4 nate or opposite: lower ovate, upper linear lanceolate, scattered, petiolate, smooth above, pubescent below, margin revolute; flowers paniculate.—Found by Kalm in Canada, woody glades. This description is taken from Linnæus altogether, and agrees very well with

some specimens I have from the Alleghanies of Pennsylvania. The flowers are small, the capsules ovate, &c. Smith says L. blended others with this. [?]

14. **L. virgata,** Raf. Stem simple virgate, pubescent; leaves scattered, or 2–3–4 nate mixed, petiolate, linear, cuneate, ciliate, acuminate; racemes axillary, short, pauciflore; pedicels equal to flowers; sepals ovate, acute, carinate, external linear; capsules ovate.—In the Alleghany Mts. Pedal, var. 1. *Breviflora*, semipedal, lower leaves oblong, short, racemes very short, 2–3 flore, var. 2. *Bracteata*, pedal, lower leaves oblong, racemes longer than leaves, base foliose, end 5–7 flore. The species 9, 10 and 14, with carinate trigone calyx, deserve perhaps to form another gubgenus, TROPENDRIA, Raf. [?]

15. **L. Floridana,** Raf. Smooth, diffuse, ramose; branches filiform; leaves scattered, minute, linear; racemes paniculate, pauciflore, naked; pedicels long, unequal; sepals and capsules ovate.—Found by Mr. Ware in Florida. Small, subdichotome, few leaves and flowers: habit of *Eudiexa*, but the exterior calyx equal in length, though narrower as usual; probably annual. [?]

[Subgenus III.] **Eudiexa.**

16. **L. secundiflora,** Raf. Smooth; stems diffuse paniculate, leaves scattered; lax, narrow, linear; racemes subspicate; flowers remote, secund; pedicels short; exterior calyx double of the internal, linear; internal silky, paniculate; capsules oblong.—Discovered 1823, in the glades of West Kentucky, rare; 6 inches high; small flowers; petals white, oblong, obtuse; stigma red; 3 oblong seeds in the capsules. It blossoms in June and July. Annual. Is it *L. thymifolia*, Smith? which is an Eudiexa! certainly not of Mchx., neither have the leaves like thyme. [L. thymifolia, Mchx.?]

17. **L. pauciflora,** Raf. Adpressed pubescent; stem humble, diffuse ramose; leaves scattered. slender, linear, cuneate, imbricate, rather obtuse; flowers few, scattered, extra-axillary; pedicels short; sepals smooth, external a little longer; capsules globose.—Near the sea-shore in Long Island and New Jersey. Small plant, only 3 inches high; it blossoms in July. Annual. [L. thymifolia, Torr.?]

18. **L. brevifolia,** Raf. Adpressed pilose; branches fastigiate; leaves scattered, petiolate, short, lanceolate or oblong, ciliolate, mucronulate; racemes erect; bracteoles linear lanceolate; flowers secund; pedicels equal; exterior sepals not much longer; capsules ovate.—Mts. Apalaches; semi-pedal; very distinct species by petiolate short leaves. Annual. [?]

19. **L. uniflora,** Raf. Smooth; stem slender, angular with few leaves, above naked; subuniflore; leaves scattered, adpressed, narrow, linear, cuneate; sepals membranaceous; exterior sepals oblong obtuse, not much longer; internal ovate obtuse; capsules globose, about 6 seeded.—Summit of the Alleghany Mt.; discovered 1825; only 3 or 4 inches high; only 5 or 6 leaves, and 1 or 2 flowers. Capsule commonly with 6 oval seeds. [?]

20. **L. stellata,** Raf. Pilose; stem erect, nearly simple; leaves 3–4 nate, petiolate, elliptic, mucronate; upper leaves alternate, lanceolate; racemes foliose; pedicels shorter; exterior sepals very

long; capsules ovato-oblong.—New York and Ohio; often mistaken for *L. villosa;* pedal, aestival; sepals linear and ovate. [L. thymfolia, Mchx., L. Nova-Cæsarea, Aust.]

21. **L. sessiliflora,** Raf. Adpressed pilose: branches diffuse virgate; leaves scattered. spreading, petiolate, linear, ciliate, acute; flowers axillary, subspicate or glomerate, sessile; exterior sepals linear, not much longer; internal lanceolate.—In Florida and Alabam, near to *L. pauciflora*, main difference leaves petiolate, ciliate, acute. Near also to *L. Floridana*, but flowers sessile. [?]

Notes on Rafinesque's Monograph.

It would appear that Rafinesque has been in too great haste to multiply species, and to give names of his own without regard to priority. In charity we must allow that, as regards the latter fault, the rules of nomenclature were not clearly settled in his day, and in both, if he has sinned in the case of this difficult genus, others have done the same. He has the merit of pointing out the value of the length of the exterior sepals as a distinctive mark, and of trying to make out the species of prior writers, although discarding their names.

Probably all species of Lechea in bud have the exterior sepals longer, but as the flowers mature the inner generally surpass the outer. Only in one species, in my knowledge, are the outer persistently longer than, and in three or four equal to the inner. I suspect Rafinesque has formed some of his species on the flowering stage. It is not safe to decide till the fruit is mature.

It will be noticed that in his generic description he repeats the character, seeds 3–9, but mentions no species with 9 seed. Normally there should be 6 seed, but the number varies from 1 to 6, and is perhaps of secondary value for distinction. I doubt whether any Lechea is annual.

1. *L. pulchella.* Twice, in different years, in about the same spot near Pleasant Mills, in the New Jersey Pines, in company with Mr. J. S. Merriam, I have met with an abnormally smooth Lechea which answers pretty well to this description, except that we did not see the full bloom, and cannot vouch for the white stigmas. I took it for a local sport of what we call L. minor, Lam., some of which regularly pubescent I think we found not far off, though this latter species does not abound, I think, in the Pines. If L. minor, it is certainly a singular form.

2. *L. cinerea.* This is a pretty correct description of what I have distributed to correspondents as *L. Torreyi.* However, there may be two distinct forms in Florida, one 3 seeded, the other 6 seeded, and the name *L. Torreyi*, I have hopes, may hold.

3, 5, 7, &c. I shall content myself, in the case of these and most of the species, with the marks bracketed at the end of the description, a name, when I think I recognize it; a query, when quite at a loss.

4. *L. furfuracea.* I have never seen anything to which this description would apply.

6. *L. tenuifolia*, Mchx., is one of the species that have the exterior sepals equal to the inner or a little exceeding them.

17. *L. pauciflora*, this must be a yearling of what our books call *L. thymifolia*, Pursh.

20. *L. stellata.* This is undoubtedly the *L. thymifolia* of Mchx, Pursh, Smith, &c. The *Nova-Cæsarea*, Austin. Species 16, 18, 19, are probably only young plants of the same.

21. *L. sessiflora*, may possibly be *L. patula*, nob., but no species known to me has the mature flowers sessile.

It may not be amiss to indicate here briefly the different forms that I have been able to distinguish, to help those who may be willing to assist me in my efforts to unravel what has been so perplexing a knot.

I. *Leaves of radical shoots elliptical, ovate, or oblong, not more than two or three times as long as broad.*

1. L. major, Mchx., outer sepals about equal in length to inner. Well described in Gray's Manual. I suspect the L. divaricata, Shuttleworth, from Florida, is only a form of this with many stamens, 30 or more.

2. L. thymifolia, Mchx. Distinguished by its long outer sepals, and leafy panicle. I have received a fragment of Michaux's specimen, by the kindness of Prof. Decaisne; Smith mentions the long outer sepals, and Pursh the leafy panicles. Pursh's thymifolia, too, grew in barren, dry woods, on slate hills, not on the sea shore. This is the L. Nova-Cæsarea of the Manual, and is often confounded with L. major.

3. L. racemulosa, Mchx. Easily distinguished by its slender spreading pedicel, oblong flower, and broadly lanceolate stem leaves. Outer sepals shorter.

4. L. thymifolia, of the Manual, but 'which must receive another name. It has been beautifully figured by Sprague in Gray's genera. It is confined to the neighborhood of the sea, but abounds some miles from it in the Pines of New Jersey. Outer sepals shorter.

5. L. patula, nob. So called from the broadly spreading branches and branchlets in specimens from South Carolina; but specimens since received from Florida are much less spreading. The radical shoots are an iron gray, assurgent with small oblong leaves. The flower is perhaps the smallest of the genus, the outer sepals about equal to the inner. I have been scarcely able to find good seed among my specimens, as the fruit seems unusually exposed to injury.

II. *Leaves of radical shoots lanceolate, much longer than broad.*

6. L. tenuifolia, Mchx. This is generally low and spreading, the capsules are large and conspicuous. The inner sepals even when broad, have only a mid rib, and no side veins, all the other species have more or less distinctly 3 veins, or ribs, rising from the base. The outer sepals about equal the inner in length.

7. L. minor, Lam., so called, but apparently without good reason. In the Manual is described the form found in the vicinity of New York and in New Jersey. On the uplands of Pennsylvania, New York and New England, and in Canada a form prevails with shorter more upright branches, and larger more clustered flowers, and more globular capsules, in Northern

Illinois, Iowa, and Wisconsin, a form of a paler colar, longer, strict, or fastigiate branches, and smaller capsules; all have the outer sepals shorter. Perhaps they may all be varieties of one species.

8. L. cinerea, Raf. There is apparently another form, with more fulvous pubescence, and six seed, which is possibly distinct. Outer sepals shorter.

9. L. Drummondii, Spach., probably belongs here, being closely related to L. tenuifolia. Outer sepals about equal.

10. L. Cubensis, nob., may also belong here. It was found in Cuba by Charles Wright, has thread like leaves, and I believe outer sepals about equal to inner.

Of the distribution: No. 1 is found from Canada to Florida, and westward, T. & G. say, to the Mississippi. I have specimens from only here and there. No. 2. from New York to Florida and Louisiana. No. 3. from Nantucket to Virginia, and Kentucky. No. 4. I know only along the coast from Massachusetts to Delaware. No. 5. South Carolina and Florida. No. 6. New Hampshire to Florida, Texas, Arkansas, Missouri, Illinois and Wisconsin. No. 7. Canada, Wisconsin, New York, New Jersey, Pennsylvania and Delaware. No. 8. Florida. No. 9. Texas. No. 10. Cuba.

I repeat my request to be furnished with the various forms of Lechea from all the States. W. H. L.

§ 253. **Flora of New Jersey.**—I recently received from Dr. Hexamer, of New Castle, a specimen of *Calluna vulgaris*, Salisb.

This plant has been found growing without cultivation, in Mass., Nova Scotia, and Newfoundland; but was never before known to grow so far south as New Jersey

The Dr. writes me that he found a few bushes near Egg Harbor. That it should be found in a wild state in New Jersey at all is a thing to be noticed; but that it should be found in its very southern extremity is still more to be wondered at.

I have also a communication from Dr. Porter, of La Fayette College, who informs me that he, in company with Dr. Green, in the latter part of August, made a Botanical excursion to "*Swarts Wooa Lake*," which lies about six miles north of Newton, in Sussex Co. This sheet of water is three miles long and one mile wide. In this little lake they found portions covered with Nelumbium uteum, Willd. Neither of them had seen this plant in a living state before, and we must draw upon the imagination in order to comprehend the emotions of two enthusiastic Botanists when beholding such a sight.

The Dr. stated that some of the leaves were spread out and seemed to float upon the surface of the water, while others were elevated from one to two feet above. The season of flowering was past. The flower stalks, however, like some of the leaves, rose two feet above the water. [Vide. Grey's Manual.]

On this same excursion they found *Nasturtium lacustre*, Gray, which was seen for the first time so far east and south. Also, *Bidens Beckii*, Torr., not before reported from New Jersey.

I collected, myself, *Drosera rotundifolia*, L., at Lyonsdale, Lewis County, N. Y., at the falls of the Moose River, growing in the crevices of the rocks. O. R. WILLIS.